

**REMARKS**

Claims 1-7, 9-16, and 18-19 are in the application and under prosecution.

By way of this communication applicants have canceled claim 8 and incorporated its limitation into claim 1. Claim 17 has also been canceled since its limitation was already included in claim 1.

Claims 1-19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as being obvious over Harrison et al.

**Examiner's Position**

It is the Examiner's position that Harrison et al. teach a process wherein hydrocarbon feedstock is passed through two or more hydrodesulfurization zones and connected in a series each containing a packed bed of solid catalyst wherein the liquid is passed from a first zone to the next until the final zone. The Examiner further mentions: make-up hydrogen being supplied to the hydrodesulfurization zone other than the first zone; hydrogen-containing gas being recovered from a subsequent hydrodesulfurization zone; target sulfur levels, etc. The Examiner believes that Harrison et al. teach a process and composition that reasonably appears to be either the same or an obvious variation of the instantly claimed product and composition.

**Applicants' Position**

It is applicants' position that Harrison et al teaches a staged hydrotreating process wherein relatively high hydrogen-containing treat gas rates are required. The claims, as now amended, require a very low treat gas rate such that the moles of hydrogen per mole of chemical hydrogen consumption be less than 3. This is not suggested by Harrison et al.. For example, the moles of hydrogen required in the examples of the Harrison et al. process range from 3.7 moles of

hydrogen per mole of feed for example 5 to 9.3 moles of hydrogen per mole of feed for examples 2, 3, and 4. Harrison et al. prefers a range from about 3 to 7. The present invention is operated in such as way that very low rates of hydrogen are required compared to convention multi-stage hydrodesulfurization, such as that of Harrison et al.

### **Double Patenting Rejection**

Claims 13-15 have been provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-35 of copending application number 09/553,108. Although the conflicting claims are not identical, the Examiner believes that they are not patentably distinct from each other because the distillate fuels of the USSN 09/553,108 claims are encompassed by the instant claims.

Claims 13-15 have also been provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-37 of copending application number 09/553,373. Although the conflicting claims are not identical, the Examiner believes they are not patentably distinct from each other because the distillate fuels of 09/553,373 claims are encompassed by the instant claims.

Applicants submit herewith Terminal Disclaimers to overcome the above obviousness-type double patenting rejections.

### **Rejection Under 35 U.S.C. 112**

Claims 5, 16 and 17 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that applicants regard as the invention.

- 5 -

It is the Examiner's position that claim 5 lacks antecedent basis to depend on claim 2.

Applicants have amended claim 5 so that it is now dependent on claim 4 and not claim 2.

The Examiner believes that claim 16 lacks antecedent basis, i.e., the process of claim 1 requires the hydrogen-containing product gas stream to be "cascaded" to the first stage reaction.

Claim 16 has been amended so that only a portion of the hydrogen-containing product gas is conducted away from the process. Support for this can be found in the last paragraph of page 10 of the instant specification.

The Examiner also believes that claim 17 fails to further limit claim 1, i.e., the process of claim 1 requires the hydrogen-containing product gas stream to be "cascaded" to the first stage reaction. The Examiner concludes by saying that claim 1 requires "at least a portion" of the hydrogen-containing product gas stream conducted away to the first hydrotreating stage.

Applicants have canceled claim 17 since its limitation was already in claim 1 as originally filed.

Therefore, applicants request that the Examiner withdraw this rejection under 35 U.S.C. 112.

Applicants' attorney notes that art has been made of record but not cited against the instant claims.

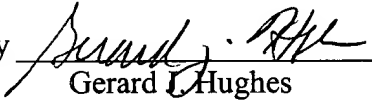
USSN 09/553,107  
GJH-0018

- 6 -

In view of the above, and in view of submission of the Terminal Disclaimers, applicants request that the Examiner pass this application to allowance.

Respectfully submitted,

Date: December 4, 2001

By   
Gerard Hughes  
Attorney for Applicants  
Reg. No. 41,855  
Tel. No. (225) 359-4942

*(Address to which correspondence is to be sent)*

ExxonMobil Research and Engineering Company  
(formerly Exxon Research & Engineering Company)  
P.O. Box 900  
Annandale, NJ 08801-0900

**MARKED-UP VERSION OF AMENDED CLAIMS ACCOMPANYING RESPONSE TO  
FIRST OFFICE ACTION FOR 09/553,374**

1. (Once Amended) A multi stage process for reducing the level of sulfur and in a distillate feedstock having a sulfur content greater than about 3,000 wppm, which process comprises:

- a) reacting said feedstream in a first hydrodesulfurization stage in the presence of a hydrogen-containing treat gas, a portion of which is cascaded from the second hydrodesulfurization stage of d) below, said first hydrotreating stage containing one or more reaction zones, each reaction zone operated at hydrodesulfurizing condition and in the presence of a hydrodesulfurization catalyst, thereby resulting in a liquid product stream having a sulfur content less than about 1,000 wppm;
- b) passing the liquid product stream to a separation zone wherein a hydrogen-containing product gas stream and a liquid phase product stream are produced;
- c) passing the liquid phase stream to a second hydrodesulfurization stage;
- d) reacting said liquid phase product stream in said second hydrodesulfurization stage in the presence of a hydrogen-containing treat gas, **wherein the rate of introduction of the hydrogen portion of the treat gas in this second stage is less than or equal to 3 times the chemical hydrogen consumption in this second stage,** said second hydrodesulfurization stage containing one or more reaction zones operated at hydrodesulfurization conditions wherein each reaction zone contains a bed of hydrotreating catalyst, thereby resulting in a liquid product stream having less than about 100 wppm sulfur;

e) passing the liquid product stream of step d) above to a second separation zone wherein a hydrogen-containing product gas stream and a liquid phase product stream are produced.

5. (Once Amended) The process of claim [2] 4 wherein the Group VI metal is selected from Mo and W and the Group VIII metal is selected from Ni and Co.

**Claim 8 has been cancelled.**

16. (Once Amended) The process of claim 1 wherein a portion of the hydrogen-containing product gas stream from the second separation zone is conducted away from the process.

**Claim 17 has been cancelled.**